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Application No. 10/593,480
Reply to Office Action of December 17, 2008

Docket No.: 5706-0103PUS1

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A submerged hollow fiber large membrane module, comprising:

~~[(I)] a two module body divided into two sections which has a permeated water collection space 5 for collecting water filtered through hollow fiber membranes and a permeated water outlet 3 for discharging the water collected in the permeated water collection space~~bodies;

~~[(II)] module support tubes which are vertically connected to the upper and lower ends of the module body, respectively~~between the two module bodies to keep the two module bodies spaced apart by a predetermined distance;

~~[(III)] a two plate type module header insertion layer~~layers each of which is provided with hollow fiber membrane spaces 10, and is the two plate type module header insertion layers being inserted into the two module body-bodies respectively to form the a permeated water collection space 5 in each of the module bodybodies;

~~[(IV)] a two plate type diffusion layer~~layers which is are provided at an upper portion thereof with a diffusion an air injection port [[4]], has diffusion tubes 11 surrounding a bundle of hollow fiber membranes 16 by three surfaces while keeping a predetermined distance from module headers, and is the two plate type diffusion layers being inserted into the two module body-bodies respectively subsequent to the module header insertion layerlayers to form a diffusion space 7 within in each of the module bodybodies; and

~~[(V)] the at least two pairs of module headers, each pair of which have theis provided with a bundle of hollow fiber membranes therebetween 16 fixed therein by a potting liquid 22 and are inserted into the module header insertion layer, the bundle of hollow fiber membranes being opened in parallel to permeated water discharge surfaces of both opposite ends so as to form the permeated water collection space 5 in the module body,~~

wherein each pair of the at least two pairs of module headers has two module headers inserted into the two module bodies respectively through the corresponding hollow fiber membrane spaces such that the bundle of hollow fiber membranes are in fluid communication with the permeated water collection space and the module headers inserted into each module

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body are spaced apart from each other, and

wherein each of the two plate type diffusion layers has diffusion tubes surrounding the bundle of hollow fiber membranes by three sides while being spaced apart by a predetermined distance from the module headers.

2. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein the permeated water collection space ~~5~~ in each of the module body-bodies is formed between an outside wall of the module body and the plate type module header insertion layer inserted into the module body.

3. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein the diffusion space ~~7~~ in each of the module body-bodies is formed between the plate type diffusion layer inserted into the module body and an inside wall of the module body.

4. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein an interspace ~~6~~ is formed between the permeated water collection space ~~5~~ and the diffusion space ~~7~~ in each of the module bodies.

5. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein the distance between the module headers ~~header~~ and the diffusion tubes arranged adjacent thereto is 1 to 20cm.

6. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein a multiplicity of diffusion holes is formed on the diffusion tubes ~~11~~.

7. (Original) The submerged hollow fiber membrane module of claim 6, wherein the diameter of the diffusion holes is 2 to 8mm.

Application No. 10/593,480
Reply to Office Action of December 17, 2008

Docket No.: 5706-0103PUS1

8. (Currently Amended) The submerged hollow fiber membrane module of claim 6, wherein ~~the diameter of the diffusion holes disposed on the diffusion tubes 11 increases by 10 to 100% as compared to the diameter of the diffusion holes disposed directly above the~~ closer the diffusion holes are to the lower part of the module, the larger the diffusion holes are.

9. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein the tensile strength of the hollow fiber membranes 16 constituting a hollow fiber membrane bundle is higher than 1kg/piece.

10. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein the hollow fiber membranes 16 constituting a hollow fiber membrane bundle are composite hollow fiber membranes having a tensile strength higher than 10kg/piece made by reinforcement by braided fabric.

11. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein the shape of the module ~~body~~ bodies is cylindrical or rectangular.

12. (Currently Amended) The submerged hollow fiber membrane module of claim 1, wherein a connecting member for coupling the two submerged hollow fiber membranes modules ~~disclosed in claim 1~~ is disposed on the air injection port [14].

13. (Original) The submerged hollow fiber membrane module of claim 12, wherein the connecting member has a passage for communicating permeated water and air between the two module headers serially coupled to each other and the diffusion tubes.